

```

*****
*
*           J o c o s e   H a v e n:   P r o b l e m s   a n d   f i x e s
*
*
*****

```

Ok folks, I'm compiling a list of what has caused flaky operation of the Amiga computers. This is a very unpopular subject with Amiga worshippers, but it should be one to pay particular attention since it can harm any product faster than obsolescence and DOES cause untold user-hours of frustrations. Flakiness affects everyone and everything from product development to end-users and especially service. If you can add some more to this list, you can give me a call at (415) 525-6973 and ask for Bruce. I'm busy most of the week so the best time is on Sundays in the morning. If you don't mind listening to a morning grouch call any other morning.

This can be especially prominent with fast expansion devices like hard drives and frame grabbers. Number one on the list of bad boards are all those RAM boards with 150 nano-second RAMs. This is the time it takes the RAM to access valid data. The smaller this number the better.

There are a lot of Amigas that need modifications. Starting with the A1000's, the daughter board needs to have its PAL chips wired together to the mother board ground and a wire to the expansion bus to the power supply ground connector. In worst cases, two of the PAL chips must be replaced with faster one's. The best source of PALs has been from Spirit Technologies. The A2000's needed to have the keyboard data and clock line capacitors removed. All the Eltek power supplies needed to be checked that a .01 MFD capacitor was installed across R65 to suppress noise and a "00" with a line through it written on the power supply label. The buffer chips U605 and U602 should be 74ALS245 and not the slower 74LS245. A 3300 ohm resistor should be installed between pin #20 and pin #11 on chip U605's address strobe. The Gary chip has been fixed to allow processor access to the KickRoms and expansion devices without needless co-processor contention. (The MOS Gary) The A500 especially needed a piece of cardboard placed behind the keyboard to prevent the keyboard from shorting to the mother board metal shielding. An authorized transistor kludge must be installed on all but the most recent A500's to clean up a signal from the Gary chip. The biggest flake generator was and still is the metal shielding on the A500. The main metal shielding had a lip just behind the internal disk drive (i.e just left of the drive as you face the computer) which does cause shorts at the end of the drive ribbon cable. The solution is to bend the lip under the shielding or to put electrical tape over the edge of the lip.

Much can be said about poorly written programs. We've all suffered as unpaid and unwilling "beta testers" from companies lacking in product quality. If it works on their machine, it does not necessarily mean that it will work on all Amigas because of hardware, software, update, and user differences. Sometimes they listen to the problems; sometimes they ignore or pacify us with promises, good-will, and just pure charm. Worst case is the buck passing. Badly written programs can go wild and corrupt our system and even ruin DOS file structures. It can be as subtle as corrupting a single bit, presently unused, to wiping out an entire system. Programs can at times work with no apparent trouble until it's discovered later in time. This can lead to blaming the wrong program or hardware as the cause of the problems. This will sound very cynical but don't believe ANY review or even this report of mine. (sigh..) Just take it with a grain of salt. Look over people's shoulders, get the dealers to demonstrate their wares, stop by a free-form users group and judge for yourself. Seek-out end-users of a product. Get to know the modem community of Amiga users. Report problems to the people responsible for the product if you think you've found a consistent problem. Unfortunately, flaky problems are not easily repeatable nor consistent, so it may be hard for them to justify their time to prove, find, and solve the problem beyond a symptom.

Static electricity, even when we don't feel or hear the "tingle", can make computer chips flaky. Always touch the power supply case before even

getting close to any circuit board or chip. In the situation of the A500, touch the internal disk drive case. A lot of damage has been caused by AGNUS chip installations. CBM has packaged the computer chips without anti-static material and the retailer many times have not Xeroxed the installation instructions for the customers. Topping the list of user burn-outs is improper cable connections or installation. If you can't bet your wallet, don't do it. I'd say a fair retailer AGNUS installation charge should be around \$20-\$25.

Degrees of unfamiliarity with the equipment or the system can cause unpredictable results. I shutter at the thought of what I would do to my present system if I was a new user and not able to access all the books, documentation, experience, and lastly my fellow computists. An old problem with books, documentation, and advice is that a certain level of background knowledge is expected and assumptions about your system are made from all sides of communication. The learning process is a leap frogging of books, notes, magazines, practice, and many times just pure inquisitive hands-on hacking.

Never assume a computer cable is correct if it fits. There are unending variations of cables with the same connectors on the ends. Once you've found the purpose and correct cable, it's best to label the connector ends with where they go. It's always good to have a continuity checker and documentation of the pin assignments. The wrong cable can and does burnout computers. Worst case is if it becomes flaky.

Ok, the following is are extracts from my notes and take it with a grain of salt for flavoring. Be careful, because it is in a raw state and reaching a conclusion from the notes will have to be tested for other machines.

UNSKILLED AND UNKNOWLEDGEABLE ATTEMPTS AT REPAIR OR MAINTENANCE CAN BE EXTREMELY DANGEROUS AND SHOULD BE LEFT TO QUALIFIED TECHNICIANS ONLY. UNAUTHORIZED SERVICE VOIDS YOUR WARRENTY.

All monitors

- 1) Re-solder HV coil to main board
- 2) Clean off dust and oil
- 3) Check for burnt or heated spots

1084 monitor (very similar to 1902A)

- 1) Intermittents
 - a) Cold solder joints and broken traces especially around daughter boards and HV coil and leads
- 2) VERY INTERMITTENT "snap!" of video; audibly noticeable.

1084S-Philips (very similar to 1902A)

- 1) Nothing
 - a) bad R475 (15K 2w flame) damaged from bad C476 (.047uF, 250V) and T402. Between June 88 and Sept 88 require warranty repair. 1084S-P monitor repair kit PN# 314891-01 billed \$44 and credited when T402 is returned to parts depot with NARDA form.

1902/2002 monitor

- 1) Fuse blower
 - a) defective degaussing switch (TH501)
 - b) defective voltage regulator STR30123 (IC501)

A500

- 1) no mouse movements
 - a) replace burnt EMI401 (1.0 ohm 1/4 watt resistor)
- 2) flaky computer
 - a) do the 2N3906 kludge
 - b) check main computer shield shorting behind disk drive
 - c) Check solder joints on power socket
 - d) flaky internal disk drive power cord
 - e) check for bent chip pins and for bent connector pins
 - f) check keyboard assembly for flakes
- 3) Power Supply (PN 312503-05)

- a) pin1 +5V 4.5A
- b) pin2 shield gnd
- c) pin3 +12V 1A

3	\	4
5		
2		1
- d) pin4 signal gnd Looking into the plug end
- e) pin5 -12V .1A

2		1
---	--	---
- 4) Green Screen; 10 short 1 long power LED blink
 - a) clean and re-insert Agnus chip
- 5) flaky keyboard assembly with spurious characters or crash with CAPLOCK LED blink
 - a) replace keyboard and tell customer of possibility of a serial device being connected to the parallel connector

A1000

- 1) fast steady power LED blink; dark screen
 - a) 74S51 (U9I) & 74F74 (U8I); Damaged from expansion port
- 2) no parallel output
 - a) 8520
 - b) PAULA
- 3) Goes thru diagnostic blinks but no Kick icon
 - a) Check for internal disk drive "track-zeroing" movement
- 4) Dead
 - a) check that expansion shield fingers aren't bent to mother board
- 5) Check for bent connector pins
- 6) no serial
 - a) check MC1488 & MC1489
 - b) check PAULA
- 7) Bad mouse or joy stick movements
 - a) check 74LS157
 - b) check 8520's

A2000 (see also A500 & A1000 & A2500 for hints)

- 1) Red screen; power LED blinks 9 short 1 long continuously
 - a) bad ram with open
- 2) Dark blank screen on power-up; LED dim
 - a) BUSTER
- 3) System time erratic
 - a) check for noise on TICK line; CBM modification to power supply
- 4) Bad mouse movements
 - a) 8520
 - b) clean mouse
 - c) broken wires in mouse cord
 - d) bad 74LS157 (U202)
- 5) First character from keyboard missing after power-up
 - a) cut out C910 & C911; CBM modification
- 6) Fuzzy video
 - a) remove a turn from the ferrite beads on the RGB lines
- 7) White screen; no Workbench Icon; LED bright
 - a) No power to PAULA; R200 (1 ohm resistor) burnt
- 8) intermittent guru's
 - a) Bad contacts on BridgeBoard (card edge or chips or bus-timing)
 - b) Virus use KV and Sentry program
 - c) Bad program(s)
 - d) Bad ram expansion board with flaky 150ns ram (should be 100ns);

AMIGA 25000 (twenty-five thousand) 2MEG board is FLAKY

 - e) use TestMem by Bruce's repair to find bad bits
 - f) CHECK THE CLOCK SIGNALS with scope for proper voltage levels
- 9) No Red in RGB only (new unit)
 - a) bad solder joint or bad trace under board at RGB connector
- 10) Check for bent connector pins
- 11) No Serial Port
 - a) DTR always on
 - 1) replace MC1488 &/| MC1489
 - 2) bad U301 CIA
 - 3) bad PAULA
- 12) Modifications:
 - a) Replace U602 and U605 (74LS245) with 74ALS245
 - Make sure that 74XX24(4|5)'s between Agnus & Ram are F types

the symptoms include spots appearing on screen

- b) Cut-out C910 and C911
- c) Put noise by-pass cap (.01ufd) on ElTek power supply TICK line across R65.
- d) Check for proper usage of ferrite beads at video connector
- e) put 3300 ohm resistor between #20 & #11 of U605
- f) Read TechTopics Issue #25 Section #3 (Apr-May-Jun 89) for details
 - 1) remove R901, C917, C902, C910, C911, C905, C908, C230, C240
 - 2) replace 1.2 KickRom with 1.3 or latest version
 - 3) if U205 & U206 are 74HC244 install RP904, RP905, RP906 (4.7Kx5); if they are not DON'T install (e.g. 74HCT244)
 - 4) add .01 UFD cap on J300 center connector to ground pad
 - 5) add 470 ohm resistor to D800 cathode to second pad from the left, under CN605. 4.3 rev boards and up have R1000 left of Q302 instead.
 - 6) if R5719 installed, add 470 ohm resistor between VCC and CPU side of R106.
 - 7) Replace ALL Gary chips (5719) with MOS type p.n. 318072-01
 - 8) Install new reset chip MITSUMI PST518B into ALL rev 6 boards (see TechTopics 25/3-3.1)
- 13) Bad joy stick moves
 - a) U202 (74LS157)
- 14) Garbage from printer port
 - a) bad U300 CIA

A2500 (see also A2000 for hints)

- 1) Put 3.3k ohm pull-up resistors on pin 11, 12, 13, and 14 on U605
These are buffered AS, UDS, LDS, and R/W signals for the expansion

A2XXX Power Supply

- 1) check diodes and all semiconductors with digital IC-safe ohmmeter
- 2) use variable transformer to bring AC voltage to operation
- 3) use 25ohm 10 watt resistor on 5v+ main to load for testing

Amiga Disk Drives

- 1) Clean with Q-tips and alcohol
 - a) if heads are sticky when they touch each other, clean heads with "KESTER Rosin Residue Remover".
- 2) "TICK-TICK" (5 ticks/sec noise with spinning disk in drive)
 - a) after cleaning head and spindle, try lightening the pressure of the head spring (problem especially with #? drives)
- 3) Works fine when connected as an Amiga Drive but not when connected to a PC Bridgeboard.
 - a) Replace the 74LS38 with a 7438 chip.
- 4) intermittent operation
 - a) Broken wires in cable; check daughter board interconnects
 - b) cracked magnetic glass switches
 - c) Magnetic interference: rotate drive 90 degrees & recheck
 - d) Motor spin erratic (on-off); re-solder motor board
 - 1) for Matsushita Drives, surface mount chip located between the drive frame and motor board and behind the eject button has bad contact; wedge with spacer
- 5) Head "plays like a violin" on the disk
 - a) clean head with rosin remover
- 6) If a cardboard drive protector is used, check drive head mounts and angles. Advise user of the danger of using head protectors from another drive and the possibility of damage to heads with worn protectors bending the head mount springs.
- 7) If dogs and cats are within fur range, blow into drive opening.

Hard Drive Controllers

- 1) check voltages & cables
- 2) check bus buffer chips
- 3) check daughter board interconnects

A-Live Board (for A500)

- 1) With time (hours and moon phase) D#aint## will be missing pixels from its picture when loaded; reloading the same picture with D#####

will eventually bring back all the missing pixels! This problem happens when the S#### Harddrive is connected between the A-Live and the A500. Other symptoms include the volume names to WorkBench Screen get corrupted but can be read with the INFO command without error!

) UNSOLVED MYSTERY!!

- a) Gary chip revision? (How do I get the latest version...)
- b) Power Supply voltage too low? Too high?
- c) Bus over-load?
- d) Needs bus termination?
- e) Needs F, ALS, or HC type chips buffering between video RAM & Agnus?

AMIGA RAM BOARDS

- 1) A1000 Spirit board
 - a) interconnects broken on Spirit Ram Board
 - b) check for correct shorting blocks and wiring
- 2) Remove and replace 150NS boards with faster ones.
- 3) Use Bruce's TestMem to find bad chips

Amiga Repair paths:

- A) Get customer to relate what activity was occurring before the onset of the problem.
- B) Color of Screen and activity of LEDs
 - 1) Dark screen LED dead or blinking quickly
 - a) Check power supply and TICK line
 - b) Check ALL clocks
 - c) Check power on each individual chip

Tips:

- 1) Bad RAM with an internal OPEN circuit can be checked by "piggy-backing" the ram chip with the same type of RAM
- 2) Bad RAM with an internal SHORT circuit can be hotter to the touch than the rest of the RAMs
- 3) Improper removal of chips from sockets with a screwdriver can cut circuit traces under the chip; always check under chips and for damaged socket connections.
- 5) For the A2000-A2500, put four 3.3K ohm pull up resistors on U605 (74ALS245)
 - a) pin11 to pin20; pin12 to pin20; pin13 to pin20; pin14 to pin20

Tips for Smooth Operation of the Amigas

by Bryce Nesbitt & Bruce Takahashi

(previously written a couple of years ago)

1) For the Amiga A1000, connect the pin #10's (ground) of the four PAL's together on the daughter board with heavy wire. Apparently the signal ground path is strange and creates unreliable logic signals to U6J, U6K, U6L, and U6N. If you want a better connection, wire the mother board and daughter board grounds together.

2) Check the expansion hold-down screws for proper length (not too long) Sometimes the screw will bend and short the second of the two layers of sheet metal to the circuit board. It may be best to try and first set the screws without the video expansion ram to "pre-tap" the sheet metal. It will be easier then to snug the hold-down screws for the expansion card.

3) Push all chips down fully into sockets. Some chips may not be seated properly or even have bent pins. Straighten bent chip pins with a pair of smooth pliers.

4) Preferences has a screen centering gadget that if moved too far to the left, will cause some of the sprites to be distorted.

5) For programmers:

- a) Use this instead of AllocMem():

```
#include "exec/memory.h"
```

```

/* Safe AllocMem. Will not let your run the system down to zero bytes.
 * For all to use, by Bryce Nesbitt
 *
 * You may wish to increase PANIC_FACTOR.
 */
#define PANIC_FACTOR_CHIP 4096L

APTR SafeAllocMem(size, flags)
long size;
long flags;
{
    register APTR p;

    if ( p=(APTR)AllocMem(size, flags) ) {
        if ( AvailMem(MEMF_CHIP) < PANIC_FACTOR_CHIP ) {
            FreeMem(p, size);
            return(0);
        } /* System is low... no go! */
    }
    return(p);
}

```

If you need to tell the user that the system is out of memory, but there is not enough memory to post a requester or Alert, simply set the title of your Window or Screen to "*** NO MEMORY ***" (possibly with a red pen color). This operation does not require any allocations. b) There is a bug in Text() that will clip text too soon if the write is started from beyond the left edge of the RastPort. c) WindowToFront() (and probably the other Intuition "deferred" actions) will lock up if the user is holding down an icon from the Workbench tool.

6) If you use internal memory expansion, you should ground clip the motherboard to the internal expansion board, preferably at the point on the expansion were the ram array is.

7) Use only high quality disks. Poor disks may format and copy correctly but time may find lost data or files.

8) Make sure that your machine's fan is unobstructed and operating

9) Use a single AC power outlet with enough grounded power sockets for all your equipment. This keeps the AC polarization correct between all your equipment power supplies. If you examine a three prong outlet, you will notice that it looks like a pair of eyes with a mouth. The mouth is supposed to be electrical "ground"; the smaller slot is the "hot"; the larger slot is "neutral". A power plug without a ground prong may have one of its contact blades larger to fit only in the "neutral" slot. Don't ever defeat it's purpose. To do so will endanger you and your equipment.

10) This should have been ICHI BAN: Never connect or disconnect cables while equipment are powered, or blindly probe for a mating. This includes your printer, external drives, modems, and other peripherals. Modems, for instance, have +/- 12 volts on its pins. Damage can result when these pins accidentally touch the wrong pins on the computer. Always check to see that you have the appropriate cable and cable adaptions before you attempt usage.

11) Don't guess where the cables connect. Look where you plug your equipment. The A2000 has a round DIN connector for the keyboard. Always make sure the connector marker is on top before plugging. Don't do as many people do. Don't insert and then twist until it fits. This will slowly damage your connectors. IBM PC keyboards are not compatible.

12) Be very careful that the metal band around your mouse connector doesn't short the pins of the mouse port when inserting.

13) If you encounter a power failure, turn-off all your equipment. When power is turned on by your Electric Company, your equipment may experience

damaging power spikes or fluctuations.

14) Remove disks when shutting-down a system. Park your harddrive if it is not the auto-parking type.

15) Video monitors develop high levels of static electricity. It is best to plug the monitor and computer into the power outlets before connecting the monitor cable. Always use a 3-prong power outlet. If your monitor plug wasn't designed with a ground prong, use a power outlet that is correctly polarized.

16) Always snug and not tighten the thumbscrews or clips to your connectors.

17) Never place magnets near your monitor. This includes speakers, printers, and telephones which develop magnetic energy.

18) Be sure to include in your startup-sequence file a stack command. However, programmers should check the stack size if they need more than 4000 bytes-Operating System overhead. I *don't* increase my stack, or if I do it's to 8000. (Now you know what me, myself, and I do.)

19) Before working on the interior of your computer, always touch either the disk drive's or power supply's metal casing to discharge any damaging static electricity.

20) The Amiga monitors have a metal shield installed under the casing. If you are using a non-Amiga monitor, make sure that your monitor has some shielding or make one using a metal kitchen tray (?).

21) Don't mix and blend versions of operating systems. You are asking for problems and will get them most of the time. If you are still using older software, you are asking for problems anyway.

22) When paying for shareware and you want a response from them, cut the bill in half and staple a note as to where the other half went. Nah, don't do it; it's illegal. Darn my buckies! I just became a felon when I thought of an excellent programmer.

23) When plugging in cards for the A2000 Amiga, there is the end of the card which screws to the back of the Amiga. The metal bracket, which is attached to the card for this purpose, has a tendency to catch at the bottom of the bracket to the casing of the Amiga. To seat properly, the bracket must be pushed against the back of the Amiga and then it will move further down. Make sense? The main point is: Don't force the bracket to seat and especially don't use the screw to force it to seat! Always screw the cards down to prevent shorts

24) Genlock for the Amiga may need some modifications to sync properly. The modification needs to be done on the early models and requires that R55 resistor be removed and R108 to be changed to 1.5K ohms. R55 is a 4.7K ohm resistor located near the Q3 transistor, and R108 is a 1K ohm resistor located near pin#10 of the MC1377 chip.

25) The composite video of the Amiga A1000 needs color correction. Your red, greens, and blues may not look correct. The modification is simple; just remove resistor R140; located on the rear-left of the motherboard. On some A1000's, R140 will have to be replaced with a 470K ohm resistor instead.

26) CORRECTED!

27) Keep your equipment out of sunlight; even when reflected by mirror or walls while you are away from home. Overheating problems are increased if the power supply vents are blocked or if it is resting on a rug. Keep the power supply in a well ventilated area.

28) You cannot keep your cat or dog's fur out of your internal disk drive.

The fan sucks through there. Internal drives now have spring loaded doors on the front which help in reducing contamination.

29) A clean mouse is a healthy mouse. Clean your ball and rollers with Q-Tips, rags, toothpicks, picks, and jack-hammers.

30) Sticky keyboard keys? Remove that key button with a chip puller and clean both button and switch with Q-Tips and alcohol. If your lucky, the shank of the key switch isn't split. If it is, The split will widen in the switch and wedge. Replace the switch or oil the shank with 3in1 oil only. You may get lucky and find a repair station with some damaged keyboards with good switches.

31) Does your monitor seem to sink into your A1000 computer case? Put a plywood or 1/4 inch plexi-glass platform underneath. Does your A2000 keyboard seem to sink in the middle? Re-enforce the middle of the keyboard's circuit board with a rubber spacer. Does this list seem a bit long? Make some hot apple cider and come back here.

32) If one or more of your mouse buttons goes flaky, it can be replaced. If the switch is "Flag", with a square body about 12mm in size with four leads you may be in luck. If the switch is the type where the actuator is completely flush to the switch body, the replacement part can be had from Panasonic; Digi-Key (1-800-DIGI-KEY) sells it as part #P9950, 36 cents each. If the switch button is slightly raised from the main body (by about 1mm) you will either need to adapt the above part or try and find a better match. Mouser electronics (817-483-4422 or 619-49-2222) part # 10KB001, 49 cents each, *might* do the job. Some mice switches are dual switches with only half being used! Use the other half by rotating the switch 180 degrees.

33) GET MEMWATCH from John Toebe!!

34) CORRECTED!

35) Dead Issue.

36) Ribbon cables should never be bent at angles to the degree of being sharply folded. All folds of ribbon cable should gently loop. A sharp crease can damage, short or break the wires inside the ribbon cable. In the cable from the disk drive mechanism, this can mean Guru's or the device not being recognized. MANY RIBBON CABLES FOR THE BRIDGECARD HAVE BEEN DAMAGED BECAUSE OF THE CREASES IN THE PACKAGING OF THE PRODUCT. THIS HAS DAMAGED DRIVES AND BRIDGECARDS. IF A RIBBON CABLE IS SHARPLY FOLDED, USE AT YOUR OWN RISK.

37) Copy and run questionable or unknown programs in RAM disk with your disks removed or write protected. This will prevent you from crashing the disk drives and damaging the disks.

38) Corrected!

39) For A2000 users with BridgeCards, keep the ribbon cable going to the 5 1/4 floppy away from the motherboard. Lay the ribbon cable on top of the cards instead of underneath. The ribbon cable picks up interference which can cause your machine to intermittently GURU or cause devices not to be recognized. (** note ** Some A2286 bridgeboards will display parity errors. Return these for exchange.)

40) All computer equipment need a minimum amount of time before powering back on-line. For the Amiga A1000 and A500, you must wait a minimum of 20 seconds before power-up and as long as 30 seconds or more for the A2000 Amiga. Computers need time to completely power-down and discharge all voltages which may be sustaining corrupted data in RAM and other chips.

41) If your computer monitor remains powered and unattended for extended periods of time, use a display blanking program. This type of program will "black-out" your display until there is some kind of user action from the mouse or keyboard. Your display will temporarily "black-out" after a

set number of minutes of inactivity. Public domain programs like "PopCLI" from the Software Distillery and "ScreenSaver" from Perry Kivolowitz are good examples. Leaving the colors stationary for days on end will burn-out the phosphors of the monitor leaving you with a ghost image of the display forever. I set my screen to black-out after 10 minutes of inactivity.

42) It's a good idea to assign your T: directory to RAM:T before executing any command script. The reason is increased speed and less drive activity.

(Hans Hansen)

Newsgroups: comp.sys.amiga

Subject: Screen colors and other boot things

Date: 16 Jul 87 01:42:24 GMT

Dark gray	Ok Hardware
Light gray	Ok Software
Red	Bad ROM Checksum
Green	Bad RAM
Blue	Bad Custom Chips
Yellow	Exception

(INITIALIZATION FROM OS ROMS)

Clear Chips

Disable DMA and Interrupts

Clear the Screen

Check the Hardware

Pass or fail the Hardware to the Screen (BLUE|BAD) (DarkGray|OK)

Checksum the ROMs

Pass or fail the ROMs to the Screen (RED|BAD) (LightGray|OK)

System setup (..is finished)

Check the RAM at \$C00000

Move SYS_BASE to \$C00000 if it exists

RAM Test ; hummm... not very good though needs to indicate hex location

Pass or fail the RAM to the Screen (LED Blinks 9short 1long | GREEN | BAD)

Check the Software

Pass or fail the Software to the Screen (Yellow|BAD) (LightGray|OK)

Set up the RAM

Link the Libraries

Find External RAM and link it to the list

Set up Interrupts and DMA (for boot drive especially)

Start default Task

Check for 68010, 68020, and 68881

Check for an Exception (System Alert?)

System Reset (..Let the good times roll!)

Hope this helps....

```
----- // -----
Erick Parsons // Knowledge is little more than knowing the questions
----- // erk@americ.UUCP or ..ames!pacbell!sactoh0!americ!erk
Sacramento Ca \\ // GENie: E.PARSONS %-) Hamatuer Radio N6RZB
----- \X/ -----
-< Yes - mine was missing those caps also >-
```

Well, I finally got to upgrade my system. I originally thought I had a Rev 4.0 motherboard, but after I took everything apart I found a sticker that stated it was a Rev 4.1. I took a trip to my dealer to pick up my Fatter Agnus, and to examine his Tech Book concerning installation and any ECO's to the Amiga 2000 (with the intention of comparing this information with the USENET "Flake Report" mentioned several times in this topic). Here's what I found:

With the exception of 1 or 2 items in the USENET list; almost everything listed as an AMIGA 2000 ECO is part of the CBM Tech Report for

upgrading an Amiga 2000 Rev 4.x to a Rev 4.5 (entire list will be presented here). My goal was to install the Fatter Agnus and perform the Rev 4.5 upgrade as best I can, and perhaps include the extra stuff listed in the USENET posting.

There weren't that many newsletters - most were updated releases of previous letters stating the same procedures. I examined everything and grabbed what I felt was the most useful and current. There were no letters on bridgeboards or Genlocks; there were some on the Rev 4.5 upgrade, Rev 6 fixes, A2620, and power supplies.

Here is the entire Rev 4.5 upgrade; as described in the CBM Service Technician Report; Issue #26 - JUL-AUG-SEP 89. The CBM Tech Reports were the reports that USENET referred to as "Tech Topics".

THE FOLLOWING INSTRUCTIONS DETAIL THE CHANGES WHICH MUST BE IMPLEMENTED TO UPGRADE A U.S. A2000 PCB FROM REV 4.0 (or higher) TO REV 4.5. CURRENT PRODUCTION BOARDS ARE EITHER REV 4.5 W/O NEW AGNUS, OR REV 6 W/ NEW AGNUS. ALSO NOTE: SOME REV 6 PCBS MAY HAVE A DRAM TOWER AND STATIC COLUMN DRAMS, SOME MAY NOT. FIELD UPGRADES ARE NOT RECOMMENDED ON REV 3.X PCBS.

26/3-2.1 A2000 FIELD UPGRADE TO REV 4.5

- 1) THE FOLLOWING COMPONENTS MUST BE REMOVED IF INSTALLED.

R901, C917, C902	LOCATED LEFT OF CN601 NEAR PIN 1.
C910, C911	(FIX FOR HYTEK KEYBOARDS). LOCATED OFF KEYBOARD CONNECTOR, CN300)
C905, C908	C908 LOCATED ABOVE CRYSTAL X1 C905 BELOW GARY PIN 20
C230, C240	LOCATED ABOVE U204, U303 (BETWEEN PIN 34 OF THE DRIVE CONNECTOR AND U301)

[Ed note: my system had all of these removed already]

- 2) REPLACE 1.2 KICKSTART PROM WITH 1.3

[I did this a long time ago]

- 3) INSTALL RP904, RP905, RP906 ONLY IF U205 AND U206 ARE 74HC244 TYPE ICS (RESISTOR PACK IS 4.7K OHM X 5, 6 PINS). DO NOT INSTALL IF ICS ARE 74HCT244 TYPES. RP905 IS LOCATED BETWEEN U205 AND U206. RP906 IS LOCATED BETWEEN PAULA AND DENISE. RP904 IS TO THE RIGHT OF DENISE.

[My ICs were HCT type so this change was not required]

- 4) ADD .01uF CERAMIC CAP ON J300. ADD THIS CAP ON SOLDER SIDE OF PCB, FROM PIN 12 (MIDDLE PIN ON CONNECTOR) TO GROUND (USE EITHER GROUND PAD LOCATED ON SOLDER SIDE, DOWN AND TO THE RIGHT - ABOVE PAULA PINS 46 AND 48).

[J300 is the jumper that selects which clock (video or line AC) signal is used to drive the RTC. My system was one of those that was originally shipped with the jumper incorrectly set to "video", and I had to change it and re-adjust the clock speed; so I decided to install this ECO on the basis that it involved an area I had previous problems in. I installed the cap and later, when I rebooted the system, double checked the clock against CBM's SYSTEST - I didn't see any difference or notice any during

use. I don't know exactly what this was suppose to cure.]

- 5) ADD 3.3 OHM 1/4 WATT RESISTOR TO PINS 11 & 20 OF U605.

[Some have used a 1k resistor here instead. U605 is also one of the 2 ICs that the USENET posting said should be changed from 74LS245 to the faster 74ALS245 if applicable. My chips were the slower ones, so even though others have done this ECO without problems; I wasn't sure if I should if I should eventually replace the chip too. Plus I wasn't comfortable with my ability to do this safely. In a different CBM ECO, I found a writeup on what this was suppose to cure:

A2000 74ALS245 BUS TRANSCEIVER RESISTOR

AMIGA 2000 SYSTEMS USING SOME EXPANSION HARDWARE, SUCH AS A2090A, IN CONJUNCTION WITH A COPROCESSOR CARD (A2620) REQUIRE A 3.3K OHM RESISTOR TO BE SOLDERED FROM PIN 11 TO PIN 20 ON THE 74ALS245 (ed: note the chip number) BUS TRANS-CHIP AT U605. THIS RESISTOR IS TO BE CONSIDERED PART OF THE STANDARD INSTALLATION PROCEDURE FOR A A2620 CARD.

I'm not having any expansion hardware problems and don't intend to get an A2620 - so I skipped this change entirely]

- 6) ADD 470 OHM 1/4 WATT RESISTOR TO D800, CATHODE SIDE, TO THE SECOND PAD FROM THE LEFT, UNDER CN605. (D800 IS LOCATED TO THE LEFT OF THE RTC AT U801). NOTE: ON REV 4.3 AND ABOVE THIS RESISTOR IS ON PCB AS R1000, LOCATED TO THE LEFT OF Q302.

[Didn't know what this was for and I didn't have a 470 OHM resistor handy (this wasn't listed in the USENET posting) - so I skipped this]

- 7) IF R5719 IS NOT PRESENT (LOCATED OFF PIN 1 OF CN400) ADD 470 OHM RESISTOR BETWEEN VCC AND CPU SIDE OF R106.

[This didn't apply to my system - R5719 was present]

- 8) REPLACE GARY IC AT U102 WITH MOS TYPE (PART NUMBER 318072-01). ONLY MOS TYPE ARE IN STOCK.

[This applied to me, but I didn't have the chips. I had heard a rumor that the ECS may have a new GARY in it, so I'm going to hold off on this until after the ECS comes out].

End of 4.5 upgrade

In addition to this list, I also added my Fatter Agnus chip (which required a jumper move and cutting a solder-pad connection also). Since several people have installed this I will skip these instructions.

The only other item of interest to me was only in the USENET posting (so I assume it is not a CBM change):

- 1) ADD A .01uFD CAPACITOR ACROSS R65 ON ElTek POWER SUPPLY TICK LINE TO REDUCE NOISE.

[I wanted to install this but was unable to determine if I had an ElTek power supply and I couldn't locate R65 - so I had to skip this].

I rebooted my systems and ran it through SYSTEST - passed with flying colors.
Booted my workbench and used it for a while - all seems healthy!!! :-) :-)

These Service letters did not apply to my system, as they refer to Rev 6
PCBs. I'm including them for others that may be interested.

26/3-4.1 A2000 CR REV 6.0 PCB EXPANSION BUS PROBLEMS

IF PROBLEMS ON A2000 CR REV 6.0 PCB'S OCCUR, SUCH AS GURU CODES,
AUTO-CONFIG OR SYSTEM HANGING UP, WITH SOME 3RD PARTY ADD-ON
CARDS IT MAY BE THE RESULT OF THE MOTOROLA TYPE 68000 CPU ICS WHICH
HAVE A MASK CODE OF 0B26.

PARTS IS STOCKING SIGNETICS TYPE 68000 UNDER PART NUMBER
390084-03

26/3-3.1 A2620 COPROCESSOR ROM UPGRADE

NEW ROMS ARE AVAILABLE TO UPGRADE THE A2620 FOR USE WITH SOME 3RD
PARTY HARDWARE ADD-ON BOARDS (GVP TYPE). THIS IS A RUNNING CHANGE
AND IS NOT COVERED UNDER WARRANTY. BOTH U4 AND U5 MUST BE CHANGED.

25/3-3.1 A2000 GURU MESSAGE ON POWER UP W/ REV 6 PCB

NEW DRAMS MAY RETAIN DATA FOR AS LONG AS 5 MINUTES AFTER POWER OFF.
AN ADVISORY MESSAGE ON POWER UP MAY INDICATE THAT THE ERROR
GENERATED BY POWER OFF HAS BEEN RETAINED, AND PRESSING LEFT MOUSE
BUTTON WILL ALLOW STARTUP TO RESUME.

A MITSUMI PST518B RESET IC SHOULD BE INSTALLED [diagram and
instructions followed]